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FEDERAL RESERVE BANK
OF KANSAS CITY

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IMPACT of Agriculture's Changing Structure

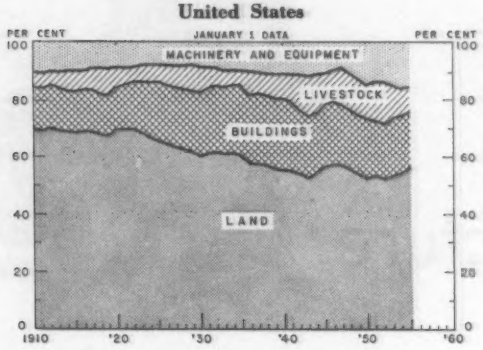
NEW PRODUCTION techniques in agriculture have been causing fundamental changes in its structure. These new developments have brought about shifts in the relative importance of the major investment items used in farming. They have enabled a declining number of farmers to produce an increasing volume of agricultural products. Variations in the rate at which new techniques have been accepted have been a factor in the wide variations in income among regions and individual farms. Variations in acceptance of techniques also have resulted in an increasing tendency for a relatively small group of farmers to produce a major share of the total agricultural products, while a larger proportion of farmers are supplementing their farm income from off-farm sources.

These changes in the structure of the industry have important implications to everyone concerned with farming. This article will present data from various sources to interpret and analyze current changes resulting from the changing technology in agriculture. Although much of the available data can be used only for national analyses, wherever possible an effort will be made to compare the present status of agriculture in the Tenth Federal Reserve District with that for the Nation.

For several decades there has been a trend toward substitution of capital for labor and land in agriculture. Since 1910, land and labor have been becoming relatively less important in farm production. Farmers have been substituting other kinds of resources and techniques—such as modern machinery and equipment, new chemicals, improved crop varieties and livestock breeds, and better buildings—for land and labor in expanding agricultural production. These substitutions, without doubt, have prevented land values from increasing even more rapidly than they have and they also have been responsible for the declining importance of labor in the agricultural industry. Use of these new devices also has made it possible for farmers to produce much more efficiently.

In 1910, land accounted for about 70 per cent of the physical assets used in the agricultural industry. The relative importance of land has declined until in 1955 it accounted for about 56 per cent of the physical assets used in agriculture. Thus, the other physical assets—buildings, livestock, and machinery and equipment—have increased in relative importance from about 30 per cent in 1910 to 44 per cent in 1955. During this same period, the physical volume of farm output has increased by about 84 per cent.

INVESTMENT IN PHYSICAL ASSETS IN AGRICULTURE



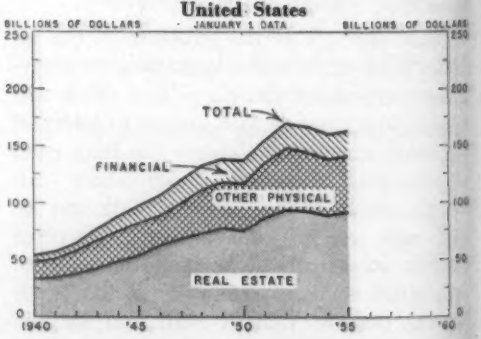
SOURCE: U. S. Department of Agriculture.

Farm employment in 1910 was listed at 13.6 million persons. It declined slowly to a level of 12.7 million persons in 1935 and has dropped sharply from that time until the present. In 1955, farm employment was estimated at 8.2 million persons, or about 39 per cent less than that of 1910. The large increase in agricultural production during the period in which the number of farm employees was declining can be attributed to increased productivity per worker because of technological developments. These trends explain why each farm worker provided the agricultural products for almost 20 persons in 1955 as compared with only about 7 persons in 1910. They also explain why output per manhour of farm work almost trebled during this period. The fact that output in agriculture —on both a total and per worker basis—has increased more rapidly than the demand for agricultural products has been responsible for many of the severe readjustment problems that have plagued the industry.

It is difficult to make meaningful specific comparisons between the 1910 and 1955 dates for most items of capital used on farms, since many of the machines and much of the equipment used today either had not been developed or were extremely crude in 1910. It is of interest, however, to point out the speed with which a few of the innovations have been adopted by farmers. The Department of Agriculture estimates that in 1940 there were 1.5 million tractors on farms in the United States. It is estimated there were 4.8 million tractors on the Nation's farms in 1955, which represents a more than threefold increase during the last 15 years. The use of other machines increased from 1940 to 1955 as follows: motor trucks from 1 million to 2.8 million; farms with milking machines from 175,000 to 740,000; grain combines from 190,000 to 960,000; and corn pickers from 110,000 to 660,000.

Measured in dollars, the average value per worker of assets used in agricultural production in the United States rose from an estimated $3,510 in 1940 to $14,389 in 1955—an increase of 310 per cent. The total value of farm assets used in agriculture increased from $53.8 billion on January 1, 1940, to $163.1 billion on January 1, 1955. This threefold increase in the value of assets in agriculture is of interest to agencies that finance agriculture. It points out that the farming industry as a whole in 1955 needed three times as many dollars for financing its assets as it did in

TOTAL FARM ASSETS



SOURCE: U. S. Department of Agriculture.

1940. The farm operators themselves, on January 1, 1955, were providing for about $145.1 billion of this financing through their own equities. They borrowed about $18 billion from lenders.

This trend toward the substitution of machines and other items of capital for labor has influenced the quantity of land that an individual farmer can operate. During the period from 1940 to 1955, while the previously mentioned changes were occurring in farm employment and mechanization, the average farm size (measured in terms of acres per farm) in the United States increased about 40 per cent. Thus, each operator not only was handling considerably more equipment but also a larger acreage.

To provide a level of living comparable to that enjoyed by workers in other lines of endeavor, most farmers today must have either an adequate-sized farm or some means to supplement their income. The Nation's farmers are using both methods to improve their living standards. In addition to the efforts by some to increase the size of their operating units, an increasing proportion of the Nation's farmers are supplementing their farm incomes with off-farm employment. The 1955 census reported that about 45 per cent of the Nation's farm operators had some off-farm employment during 1954, compared with only about 31 per cent having such employment in 1939. In 1954, about 28 per cent of the operators worked 100 days or more in off-farm employment, compared with only about 15 per cent in 1939.

Farmers in the Tenth Federal Reserve District started mechanizing earlier than most of the Nation's farmers. Consequently, the rate of growth for most major items of equipment from 1940 to 1955 was smaller within the District than it was for the Nation. Tractor numbers in the District increased about 125 per cent from 1940 to 1955, as compared with a substantially larger increase for the Nation. Grain combines also were much more prevalent in the District by 1940 and, thus, the rate of expansion in numbers in the District from 1940 to 1955 was substantially less than for the Nation. The rate of increase in motor trucks was about the same in the District as for the Nation.

The increase in the average acreage per farm in District states from 1940 to 1955 varied widely. Compared with an approximate 40 per cent increase for the Nation, the following increases occurred in District states: 109 per cent in New Mexico, 66 per cent in Wyoming, 55 per cent in Oklahoma, 54 per cent in Colorado, 35 per cent in Kansas, 25 per cent in Missouri, and 20 per cent in Nebraska.

Within District states, 43 per cent of the farm operators had some off-farm employment in 1954, compared with only 29 per cent having such employment in 1939. About 24 per cent of the operators worked 100 days or more in off-farm employment during 1954, compared with 12 per cent in 1939. The percentage of farm operators who had some off-farm employment in 1954 was: 52 per cent in Oklahoma, 47 per cent in New Mexico, 45 per cent in Colorado, 44 per cent in Missouri, 43 per cent in Kansas, 40 per cent in Wyoming, and 30 per cent in Nebraska.

Changing Composition of Farm Production

Since goods and services are produced for consumption, changing consumer preferences, along with variation in techniques of production, influence the composition of farm production. Per capita consumption of cereal products and potatoes has been declining, while that of meat, poultry products, dairy products, and fruits and vegetables has been increasing.

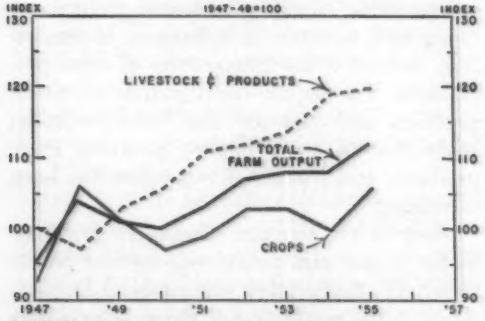
Many of the complex adjustment problems in the wheat and potato regions can be attributed to the fact that technological developments in the production of these commodities

have encouraged expansion in output, although declining demand normally would dictate contraction in production. Since consumer tastes for individual commodities tend to be independent of their production, such diverse trends create serious problems.

On the other hand, the strong demand for livestock products caused prices for these products to be favorable throughout most of the period since the beginning of World War II. These favorable prices, along with new techniques, caused production of livestock products to increase rapidly in recent years. The rate of increase was so rapid that supplies of livestock products became burdensome and prices for many of these commodities have been depressed in recent months. It is interesting to note, however, that most of the increase in agricultural production in recent years has been accounted for by the increased production of livestock products.

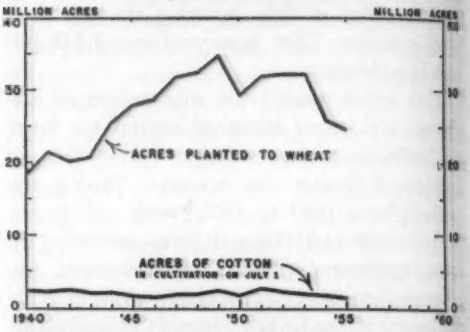
The acreage planted to wheat and cotton in Tenth District states expanded quite rapidly with the stimulus of war demand during and immediately following the World War II years. The cessation of abnormal war demands along with curtailment programs have caused the acreage planted to contract sharply in recent years. In spite of this contraction in acreage planted, carryover stocks of both

CROP AND LIVESTOCK OUTPUT
United States



SOURCE: U. S. Department of Agriculture.

ACREAGE PLANTED TO WHEAT AND COTTON
Tenth District States



SOURCE: U. S. Department of Agriculture.

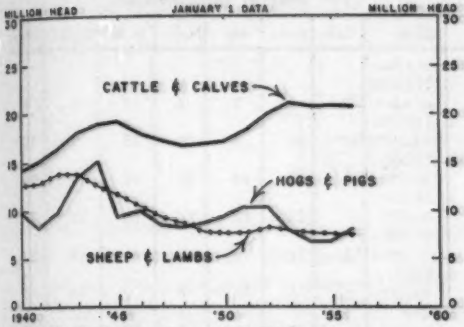
commodities have increased in recent years and currently are at record-high levels.

To a large extent, the acreage taken out of wheat and cotton production was planted to other crops. The strong demand for livestock products, combined with the fact that resources in District states are well adapted to livestock production, was responsible for many of these resources being shifted into livestock production. Thus, within District states, there has been a strong tendency in recent years toward more livestock production.

It should be emphasized, however, that there were substantial differences in production trends for the different kinds of livestock. Sheep and hog numbers within the District have been tending to decline, while cattle numbers have been tending to increase during the past 15 years. The increase in beef production has more than offset the decrease in pork and lamb and mutton production. Consequently, the major efforts of District farmers to increase agricultural production in the last 15 years have been pointed toward increasing beef production.

This particular change in production is of special interest, since new techniques for producing beef have not been developed as rapidly as have new methods for the production of many other agricultural commodities.

NUMBER OF LIVESTOCK ON FARMS
Tenth District States



SOURCE: U. S. Department of Agriculture.

This change provides evidence that a strong demand for a commodity can be equally or more important than an improved technique in stimulating production of a commodity.

Variations in Farm Income

The changes that have occurred in the structure of American agriculture during the war and postwar years have had a substantial influence on farm incomes. With the wartime demand for agricultural products, realized net income from agriculture in the Nation increased from $4,289 million in 1940 to $17,191 million in 1947, and since then it has declined to an estimated $10,600 million in 1955. Since numbers of farmers declined rather sharply during this period, per capita incomes increased more rapidly than total incomes from 1940 to 1947 and have declined less rapidly since 1947.

Average realized net farm income per farm also varies widely from state to state in any given year. In 1954, the average realized net farm income per farm for the United States was $2,316, according to the Department of Agriculture. It varied from a high of $15,380 per farm in Arizona to a low of $1,078 in Maine. Although these figures will vary from year to year, in general they will be above the national average in the western states, the Great Plains region, and the Corn Belt, and below the national average in New England, the Appalachian region, and the southern states. This variation from region to region can be explained largely by variation in size of unit and in the degree to which technological developments have been adopted.

Ranked from high to low, the average income per farm in Tenth District states for 1954 was $3,945 in Wyoming, $3,194 in Nebraska, $3,132 in New Mexico, $2,583 in Colorado, $2,532 in Kansas, $2,245 in Missouri, and $1,618 in Oklahoma. These averages within the District also will vary from year to year but, in general, will average highest in the mountain states and the High Plains areas, and lowest in Missouri, southeastern Kansas, and eastern Oklahoma. It should be pointed out that the averages for Kansas, Missouri, New Mexico, and Oklahoma in 1954 were relatively lower than normal because a wide area of these states suffered severe drought in 1954.

Variation in farm income between regions and states was large, but variation within any given region or state was even greater. In the 1955 census, farms were classified by economic class. Thus, for comparative purposes, it is possible to classify them into commercial and other farms and to divide the commercial farms into size groups based upon the value of products sold. In both the United States and Tenth District states, about 3 per cent of the farms sold $25,000 or more of agricultural products in 1954. From $10,000 to $25,000 worth of products were sold from an additional 11 per cent of the farms in Tenth District states, as compared with 9 per cent for the Nation. At the other end of the classification, 33 per cent of the farms in District states were residential, part-time, or commercial farms on which less than $1,200 worth of products were sold in 1954. For the Nation as a whole, 40 per cent of the farms fell into these three categories.

There also was substantial variation in economic class within District states. As com-

pared with the national figures, a substantially larger proportion of the farms in Wyoming, Nebraska, Colorado, Kansas, and New Mexico fell in the economic classes where $10,000 or more of agricultural products were sold per farm, while in Missouri and Oklahoma a smaller proportion fell in these classes. The proportion of farms classified as residential, part-time, or commercial on which less than $1,200 worth of products were sold in the states of Oklahoma, New Mexico, and Missouri was higher than that of the Nation in 1954. For the other District states, the proportion in these categories was substantially lower than for the Nation. These data for the District and for the states within the Tenth District emphasize the wide variability existing in income within a given area. They also indicate that there are large numbers of farmers who either must increase the volume of their sales or supplement their farm incomes with nonfarm sources, if adequate levels of living are to be maintained.

FARMS BY ECONOMIC CLASS, 1954

Class	United States		Tenth District States	
	Number	Per cent of total	Number	Per cent of total
Commercial:				
1. $25,000 or more	134,041	3	16,977	3
2. $10,000 - $24,999	448,771	9	68,573	11
3. $5,000 - $9,999	706,680	15	118,068	19
4. $2,500 - $4,999	811,482	17	118,046	19
5. $1,200 - $2,499	763,259	16	91,308	15
6. $250 - $1,199	462,442	10	51,276	8
Part-time[1]	574,579	12	65,042	11
Residential[2]	879,094	18	85,509	14
Abnormal[3]	2,615	†	279	†
Total	4,782,963	100	615,078	100

Note: Commercial farms show value of products sold.
[1] Value of products sold between $250-$1,199 plus 100 or more days of off-farm work.
[2] Less than $250 value of products sold.
[3] Public and private institutional farms, etc.
† Less than 1 per cent of total.
SOURCE: Census of Agriculture, U. S. Department of Commerce.

FARMS BY ECONOMIC CLASS IN TENTH DISTRICT STATES, 1954
(Per cent of total number)

Class	Colo.	Kans.	Mo.	Nebr.	N.M.	Okla.	Wyo.
Commercial:							
1. $25,000 or more	7	3	1	4	7	1	8
2. $10,000 - $24,999	15	16	6	19	10	7	17
3. $5,000 - $9,999	20	25	14	32	10	13	23
4. $2,500 - $4,999	17	22	18	24	10	16	19
5. $1,200 - $2,499	13	14	18	11	11	15	13
6. $250 - $1,199	6	6	12	4	9	10	5
Part-time[1]	9	7	13	3	13	17	8
Residential[2]	13	7	18	3	30	21	7
Abnormal[3]	†	†	†	†	†	†	†
Total	100	100	100	100	100	100	100

Note: Commercial farms show value of products sold.
[1] Value of products sold between $250-$1,199 plus 100 or more days of off-farm work.
[2] Less than $250 value of products sold.
[3] Public and private institutional farms, etc.
† Less than 1 per cent of total.
SOURCE: Census of Agriculture, U. S. Department of Commerce.

Summary

The agricultural industry has been passing through a period of severe adjustment. The forces responsible for the problems created by this adjustment have been exerting more or less steady pressure for change in the industry during the past half century. The changes that have been made, however, have not evolved in a steady fashion. Instead, these changes frequently have been brought about abruptly. Shortages of labor during war periods and periods of prosperity have encouraged farmers to accept technological developments rapidly. Use of these techniques enabled a smaller number of farmers to produce the needed volume of agricultural products. Their use also resulted in the need for substantially more capital in agriculture. Thus, the agricultural industry has been faced with all of the problems involved in readjusting to the use of less labor in the industry and in providing for rapidly increasing capital requirements.

DEPOSIT SEASONALITY *in the* Tenth District

TO A COMMERCIAL BANK the ebb and flow of deposits is of vital concern, affecting reserves available for lending or purchasing other income-earning assets as well as influencing reserves legally required, or customarily maintained, in support of its deposit liabilities. The identification and measurement of seasonal influences provide considerable refinement to analyses of deposit movements, and indeed to many economic time series. To the extent that the seasonal pattern of an economic variable is regular and stable, seasonal variations can be anticipated and more efficient adjustments may be made by the individual and business units whose economic position is affected. Recognition of seasonal influences also permits a more precise measurement of nonseasonal fluctuations in a time series, thereby assisting in the ever present problem of anticipating cyclical and trend movements in important economic variables. This study identifies and measures seasonal variations in demand deposits at member banks in the Tenth Federal Reserve District. Time deposits are not considered, since they do not display important seasonal changes.

In studying movements of demand deposits it is possible to isolate and combine the constituent elements of total demand balances in various ways. This article treats the seasonal behavior of three distinct, but related, deposit series: (1) demand deposits exclusive of interbank balances, adjusted for cash items reported in the process of collection; (2) deposits of domestic banks held at District member banks, or interbank balances; and (3) net demand deposits, defined as total demand deposits less the sum of cash items in the process of collection and balances due from domestic banks. The first of these three series includes the checking accounts of individuals and businesses and of state and political subdivisions, as well as Treasury balances held at District member banks. For brevity, this series will be referred to simply as checking deposits. It would be desirable for some purposes to separate Treasury deposits held at member banks from this series; unfortunately, lack of readily available data prevents this. The second of these series, interbank deposits, consists of balances listed as "due to" banks on the books of individual member banks. It is appropriate to separate interbank from other demand deposits, since seasonal changes in correspondent balances are quite different from, and much more irregular than, seasonal variations in other deposits. The sources of seasonal variation in interbank deposits, moreover, are not identical with those affecting other demand balances. Net demand deposits, the third series to be discussed, are strategic from the viewpoint of the individual member bank, representing the deposits on which its legally required reserves are calculated.

The identification and measurement of seasonal influences undertaken in this article are based upon deposit figures taken from the years 1949 through 1955. For each of the three series discussed, the basic data utilized

are monthly averages of daily figures. Seasonal variations are measured by means of the conventional 12-month moving average method. This method estimates trend and cyclical movements in deposit figures. After removal of these longer-run movements, the remaining deposit fluctuations are principally seasonal in character, permitting a quantitative estimate of seasonal deposit changes.

Individual banks would need to exercise care in the use of a seasonal index of deposits for a group of banks. Such an index represents the average seasonal change in aggregate deposits at banks in the group and describes only in broad outline the unique seasonal behavior of deposits at individual banks. By classifying member banks according to reserve status and computing separate indexes for reserve city and country banks, groups displaying more nearly similar seasonal deposit characteristics are obtained. Still, to an individual bank an index for a group of banks is at best an imperfect substitute for an index of seasonality in its own deposit liabilities. When employing a seasonal index for the purpose of identifying major nonseasonal deposit movements, the limitation on the use of an aggregate index is less restrictive. Since major nonseasonal fluctuations in District deposit totals tend to affect a large sector of the District banking community, identification of these variations in District deposit figures may assist an individual bank in forecasting future deposit trends.

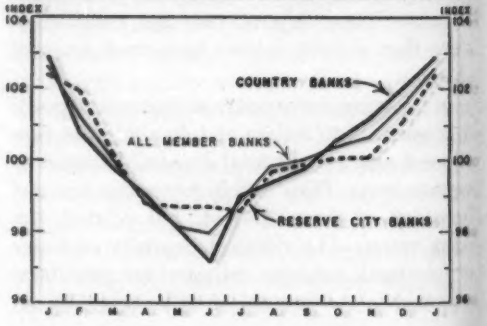
Checking Deposits

The accompanying table and chart show the seasonal behavior of checking deposits at country, reserve city, and all member banks in the Tenth District. In the interpretation of these seasonal movements, it must be recalled that the data utilized to calculate the indexes are monthly averages of daily deposit levels. Thus, while the country bank index displays a decline of 2.1 percentage points in the monthly average deposit level between January and February, the actual reduction between the first day of January and the last day of February is somewhat larger. Peak-to-trough changes in the index similarly understate the observed seasonal variation.

The index for all member banks indicates a seasonal expansion from July through January followed by a subsequent contraction ending in the May-June period, with the seasonal swing over the year altering the index by 4.7 basis points. Converted to absolute terms, a 4.7 percentage point change in this index is approximately equivalent to a $230 million range of variation when these deposits are at levels prevailing in the past year. Although the general seasonal pattern of this deposit series is common to reserve city and country banks in the District, there are apparent differences in the monthly movements of the

CHECKING DEPOSITS, TENTH DISTRICT MEMBER BANKS
Seasonal Indexes

Month	Country Banks	Reserve City Banks	All Member Banks
January	102.9	102.4	102.6
February	100.8	101.9	101.2
March	99.9	100.2	100.0
April	99.0	98.8	98.8
May	98.1	98.7	98.1
June	97.2	98.7	97.9
July	99.0	98.6	98.8
August	99.4	99.7	99.8
September	99.8	99.9	100.0
October	100.6	100.1	100.4
November	101.2	100.1	100.7
December	102.0	101.1	101.5



indexes for these two classes of banks. At country banks the peak-to-trough change in the seasonal index is 5.7 percentage points—roughly a $150 million deposit variation. At reserve city banks the seasonal swing is less pronounced, in both absolute and relative terms, altering deposits about $80 million, or 3.8 basis points. While seasonal deposit contraction at reserve city banks is substantially concluded by April, country banks experience continuing deposit losses through June.

Seasonal changes indicated by these indexes may seem to imply a rigidity in the seasonal pattern of deposits which is not actually present. Although a 1.4 percentage point reduction in checking deposits at all member banks between January and February is an average occurrence, observed seasonal decreases in a given year may be larger or smaller. Considerable improvement in the interpretation of seasonal variations is achieved if allowance is made for minor alterations in the seasonal pattern from one year to the next. This may be accomplished by applying error margins to the monthly deposit movements suggested by the index.

For all member banks it is found that the month-to-month changes indicated by the index contain a potential margin of error of approximately 0.4 percentage points in either direction. For example, the March-to-April decrease of 1.2 percentage points should be understood to indicate a seasonal decline of 0.8 to 1.6 percentage points. Seasonal changes in checking accounts between March and April were within these limits in a majority of the years studied. An equal margin is to be applied to the country bank index. To the reserve city bank index, however, a 0.6 percentage point error margin must be applied, indicating that the seasonal pattern at these banks is less stable. Irregularity in the seasonal pattern is greatest during the fall months at reserve city banks, while for country banks the size of the seasonal change between June and July is the least stable.

These error margins can be applied to the peak-to-trough swings in the three indexes as well as to the month-to-month changes. For example, the seasonal reduction in checking deposits at all member banks between January and June usually will be between 4.3 and 5.1 percentage points, or in absolute terms, between $210 million and $250 million at current deposit levels. Seasonal swings beyond these limits are not unknown, but a January-to-June deposit loss of substantially more than $250 million or less than $210 million would indicate the influence of a nonseasonal factor.

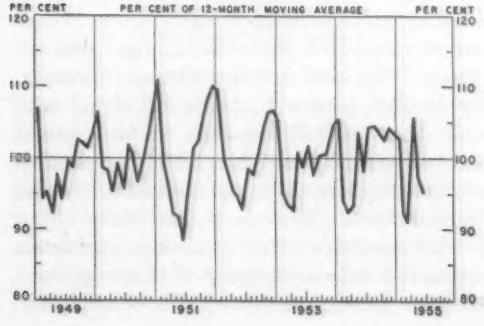
Seasonal changes in checking deposits portrayed in the index for all member banks broadly reflect the combined effect of deposit transfers between District and non-District banks and variations in business and agricultural loans extended by District banks. While reliable seasonal indexes of these loan movements are not available, evidence points to an expansion beginning in July and accelerating from October through December. Debt repayment characterizes the first four months of the year. The direction of seasonal deposit variations roughly parallels these loan changes, but the peak-to-trough change in checking deposits is substantially larger than the total swing in the volume of loans. During the last half of the year, checking deposits increase more rapidly than loan volume as balances are transferred to the District; thus, for the District as a whole, reserve funds are supplied in a period of enlarged seasonal demands for bank accommodation. However, the decline in reserve needs associated with seasonally reduced demands for bank credit in the spring is more than offset by transfers of checking deposits to non-District banks. In recent years, this reserve loss in the spring has been partially offset by an inflow of funds associated with repayment of loans guaranteed by the Commodity Credit Corporation.

Interbank Deposits

Since nearly 90 per cent of the total volume of interbank deposits in the Tenth District is held at reserve city banks, the description of interbank deposits which follows does not distinguish between reserve city and country banks and has only limited application to the deposit liabilities of the latter class of banks.

Correspondent balances usually reach a peak in the December-to-January period and a trough from March to June. In recent years, the full seasonal swing has affected the level of these deposits by $100-$200 million. The bulk of the seasonal decline occurs between January and February, when a $100 million reduction in the level of these deposits is common. A seasonal rise in July is followed by erratic changes during the late summer and early fall months, but expansion is characteristic of the October-to-January period. A seasonal pattern is apparent in the movements of interbank deposits, as is evident in the accompanying chart, which may be described generally as an end-of-the-year expansion followed by a first-of-the-year contraction. These seasonal changes, however, are not sufficiently regular to justify calculation of a monthly seasonal index. Indeed, an attempt to force the movements of interbank balances into the rigid seasonal pattern implied by a seasonal index produces misleading results.

INTERBANK DEPOSITS, TENTH DISTRICT MEMBER BANKS



Correspondent balances are extensively utilized by country banks as check clearing accounts. During months in which the pace of business activity is rapid, a high volume of check payments requires maintenance of a larger clearing account to provide for the possibility of a large unfavorable clearing balance on any given day. To an extent, therefore, seasonal changes in interbank balances reflect the altered tempo of business activity. Monthly variations in interbank deposits held by country banks with city correspondents also occur in consequence of seasonal variations in the clearing balance on country banks. This is well illustrated by the response of interbank balances to repayment of agricultural loans guaranteed by the Commodity Credit Corporation. Such loans represent, primarily, advances on the District wheat crop. In the years 1949-54, these loans matured on April 30, and an April-to-May increase in the average daily level of interbank balances occurred in the years 1949, 1950, 1953, and 1954. In 1955, the maturity date was advanced to March 31, and the associated rise in correspondent balances took place a month earlier. The April-to-May rise in interbank balances was absent in the years 1951 and 1952, since only a small portion of the wheat crop in 1950 and 1951 was placed under loan.

Net Demand Deposits

Net demand deposits, upon which legally required reserves are calculated, may be viewed as the difference between a bank's checking accounts and its net deposit claims on other banks. Tenth District country banks on balance have deposit claims against other banks, and consequently net demand deposits for this group of banks tend to vary inversely

with the volume of interbank balances in the District. Reserve city banks, on the other hand, on balance have deposit liabilities to other banks; net demand deposits for these banks tend to vary directly with District interbank balances.

These relationships are illustrated by a comparison of the seasonal indexes, contained in the table on net demand deposits, with those given previously for checking accounts. At reserve city banks seasonal movements in net demand deposits are noticeably larger than the fluctuations in checking accounts. Deposit expansion in the latter half of the year affects checking and interbank deposits in the same direction. Since reserve city banks on balance have deposit liabilities to other banks, net demand deposits rise more rapidly than checking accounts. Conversely, in the first half of the year a parallel movement of interbank and checking deposits reduces net demand balances sharply. The peak-to-trough variation in reserve city net demand deposits alters the seasonal index by 5.9 index basis points. At current deposit levels, this is equivalent to approximately a $160 million change in absolute terms, which creates a seasonal swing in required reserves of about $29 million.

At country banks, seasonal fluctuations are more moderate in net demand deposits than in checking accounts. The growth in District interbank balances during the fall months increases their net deposit claims on other banks, tending to reduce their net demand deposits and to offset partially the effect on required reserves of a rise in checking accounts. The spring reduction in these correspondent balances, on the other hand, prevents net demand deposits from falling as rapidly as checking accounts. The crest-to-valley change in net demand deposits at country banks is 4.8 percentage points, or about $110 million at recent deposit levels, which alters required reserves approximately

NET DEMAND DEPOSITS, TENTH DISTRICT MEMBER BANKS

Seasonal indexes

Month	Country Banks	Reserve City Banks	All Member Banks
January	102.4	103.3	102.9
February	101.8	100.5	100.9
March	101.0	98.9	99.7
April	99.7	97.5	98.5
May	98.1	98.1	98.1
June	97.6	97.4	97.5
July	98.5	99.1	98.9
August	99.2	100.0	99.9
September	99.5	100.1	100.0
October	100.1	100.9	100.6
November	100.8	101.7	101.2
December	101.4	102.4	101.9

$13 million. Thus, although country banks experience larger seasonal changes in checking deposits than do reserve city banks, the latter face more marked seasonal variations in net demand deposits and required reserves.

For all member banks in the District, seasonal movements in checking accounts and net demand deposits are closely correlated. This fact indicates that for Tenth District member banks as a group, seasonal changes in "due from" and "due to" banks are approximately equivalent; District member banks neither lose nor gain net deposit claims on non-District or nonmember banks to a major degree.

The irregular seasonal character of interbank deposits decreases the stability of the seasonal pattern in net demand deposits at both reserve city and country banks. The index for all member banks is not affected materially and the error margin to be applied to the changes indicated by that index remains 0.4 percentage points. Monthly changes in the reserve city bank index, however, contain a potential error of about 0.7 basis points on the average. To the country bank index, a 0.5 percentage point error margin should be applied.

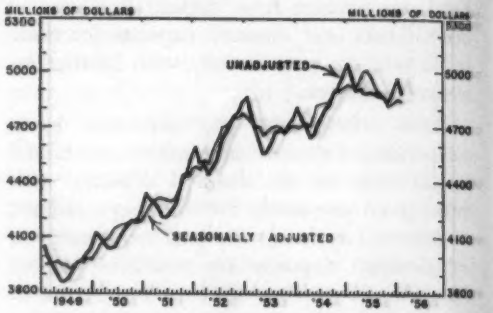
The reliability of the net demand deposit indexes for both country and reserve city banks is lowest in the month following ma-

turation of wheat loans guaranteed by the Commodity Credit Corporation, since the degree of change in that month depends upon the volume of wheat placed under CCC loan the previous year. Also, the indexes for reserve city and country banks reflect the April 30 maturity date for repayment of these loans. If the March 31 maturity date established in 1955 continues in future years, the seasonal pattern in net demand deposits will change in a manner which cannot be accurately foreseen. It seems likely, however, that the principal effect will be to raise the seasonal index for reserve city banks in April as interbank balances rise and lower the May figure as these deposits are drawn down. For country banks the April value of the index would be reduced because of the rise in "due from" banks and the May value increased as these balances are reduced.

Identifying Major Nonseasonal Fluctuations

The use of seasonal indexes for isolating important nonseasonal fluctuations in District deposit figures may be illustrated by a comparison of seasonally adjusted and unadjusted data on checking deposits at all member banks, presented in the accompanying chart. Of particular significance at this time is the behavior of the seasonally adjusted series during 1955, a year in which District banks experienced a sharp reduction in checking deposits from July through November, amounting to approximately $190 million on a seasonally adjusted basis. It should also be noted, however, that after adjustment for seasonal influences these same deposits rose by about $80 million during the first six months of the year. Perhaps of greater interest to District banks is the fact that the seasonally adjusted series displays an upswing following the November trough. The adjusted series was derived, however, without allowance for minor alterations in the seasonal pattern. Applying the 0.4 percentage point error margin to the seasonal index for all member banks, it is found that the November-to-December and the December-to-January increases are both within the limits of potential seasonal changes. Similarly, the January-to-February reduction in deposits was not significantly larger than average for this season. These recent deposit changes suggest that the nonseasonal forces reducing deposits from midyear to November 1955 were absent during the past three months.

CHECKING DEPOSITS, TENTH DISTRICT MEMBER BANKS

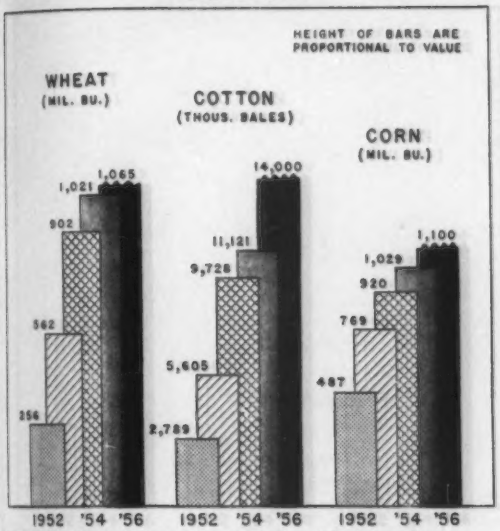


Summary

The purpose of this article has been to identify and measure seasonal variations in deposits at Tenth District member banks. Seasonal indexes have been constructed for checking accounts and net demand deposits. The latter index for reserve city and country banks, as opposed to all member banks, is less dependable, however, due to the unstable seasonal pattern of interbank balances. Care must be exercised in the employment of such indexes by individual banks, since they portray only the average seasonal variation at a group of banks. Nevertheless, aggregate indexes are useful for isolating important nonseasonal influences which affect a large sector of the District banking community.

CARRYOVER STOCKS

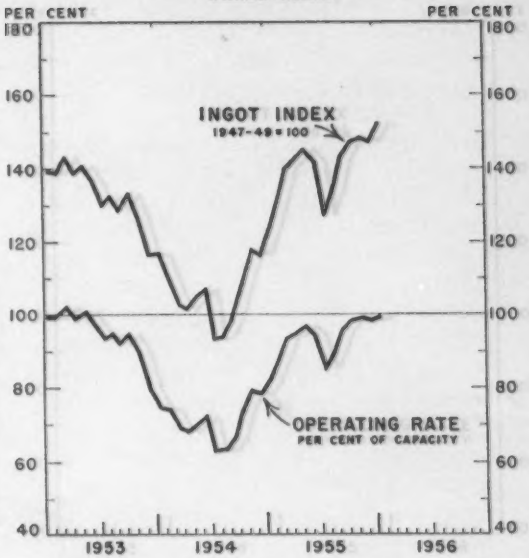
United States



SOURCE: U.S.D.A. Crop years beginning July 1 for wheat, August 1 for corn, and October 1 for cotton.

STEEL PRODUCTION

United States



BANKING IN THE TENTH DISTRICT

District and States	Loans				Deposits			
	Reserve City Member Banks		Country Member Banks		Reserve City Member Banks		Country Member Banks	
	February 1956 Percentage Change From							
	Jan. 1956	Feb. 1955	Jan. 1956	Feb. 1955	Jan. 1956	Feb. 1955	Jan. 1956	Feb. 1955
Tenth F. R. Dist.	−1	+13	+1	+3	−2	−3	−2	0
Colorado	0	+22	+1	+13	+2	+1	−1	−1
Kansas	−2	+8	−1	−7	−3	−3	−3	−2
Missouri*	−3	+5	+1	+12	−2	−6	−2	+1
Nebraska	−2	+12	0	0	−2	−4	−2	−5
New Mexico*	**	**	0	+26	**	**	0	+7
Oklahoma*	+1	+17	+2	−1	−4	−1	−1	+5
Wyoming	**	**	0	+10	**	**	−4	−1

*Tenth District portion only. **No reserve cities in this state.

PRICE INDEXES, UNITED STATES

Index	Feb. 1956	Jan. 1956	Feb. 1955
Consumer Price Index (1947-49=100)	114.6	114.6	114.3
Wholesale Price Index (1947-49=100)	112.3	111.9r	110.4
Prices Rec'd by Farmers (1910-14=100)	226	226	244 r
Prices Paid by Farmers (1910-14=100)	280	281	283

r Revised.

TENTH DISTRICT BUSINESS INDICATORS

District and Principal Metropolitan Areas	Value of Check Payments		Value of Department Store Sales		*Value of Residential Building Permits	
	Percentage change—1956 from 1955					
	Feb.	Year to date	Feb.	Year to date	Feb.	Year to date
Tenth F. R. Dist.	+10	+9	+8	+4	−34	−36
Denver	+13	+10	+15	+11	−45	−53
Wichita	−3	−4	+9	+1	−61	−50
Kansas City	+8	+9	+3†	−1†	−35‡	−14‡
Omaha	+6	+4	+4	+1	+129	+77
Okla. City	+6	+5	+8	+7	−39	−36
Tulsa	+17	+18	+4	+1	−23	−39

*City only. †Kansas City, Mo., only. ‡Kansas City, Mo., and Kans.

FEDERAL RESERVE BANK OF KANSAS CITY
INCORPORATED MAY 18, 1914
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